

APOLLO PROGRAM DIRECTIVE NO. 40

TO: DISTRIBUTION

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APOLLO PROGRAM DIRECTOR

SUBJECT: LAUNCH CRITICAL SPARES MANAGEMENT

I. PURPOSE

This Program Directive provides the definition of Launch Critical Spares and the criteria for their selection; the responsibilities and actions required for managing these spares at KSC; and the requirements for status reporting. The objective is two-fold: (1) establish the optimum spares to achieve high degree of launch-on-schedule probability; (2) provide the Apollo Program Director, Managers, and their staffs with central unified management data and controls for decision making purposes.

II. SCOPE

The provisions of this Directive apply to all Center Apollo organizations and their contractors having equipment support responsibilities at Kennedy Space Center.

III. DEFINITION AND SELECTION OF CRITERIA

A. The definition of a launch critical spare is:

A component, part, or assembly to be used in replacing an item whose satisfactory operation has been determined by the design activity to be mandatory to launch operations.

B. The criteria to be used for the selection of launch critical spares is:

1. Item is mandatory for launch/mission.
2. It is a first level maintenance item.

NOTE: The office of Primary Responsibility for this publication is APO, MAP-2. For updating purposes, recommendations for revisions shall be submitted to this office.

3. Once countdown has started, the failed part can be identified and removed and the replacement part installed and verified in the system within 12 hours. (The 12 hour down time is defined to be from fault detection through resumption of count-down.)

#### IV. ACTION REQUIRED

##### A. KSC-MSC-MSFC

1. Using the above criteria (and the management principles of the Apollo Logistics Requirements Plan - NHB 7500.1), MSC and MSFC, performing coordination with KSC, shall take that action necessary on those systems for which it has design engineering responsibility to:
  - a. Identify all Launch Critical Spares by maintenance requirements analysis. This shall include a safety analysis to assure that all identified Launch Critical Items can be fault isolated, removed, and replaced, and the replacement part verified in a safe manner during launch count-down scheduled holds.
  - b. Position the established levels of Launch Critical Spares at KSC prior to the start of CDDT. Actions must include positioning of associated Maintenance Ground Support Equipment (MGSE) and the supporting operating and maintenance manuals at the launch site.
  - c. Establish a spares replenishment plan to assure optimum KSC stockage levels for each designated Launch Critical Item. A rapid resupply capability shall be incorporated in the plan.
  - d. Discriminately provide for supply services and establish inter-center procedures/agreements for transportation, accountability, storage and issue and reporting.
2. Operating procedures shall be established to:
  - a. Assure spares configuration update resulting from approved change actions.

- b. Review and revise as required the stockage levels on a continuing basis using actual failure/usage data.
  - c. Assure Launch Critical Spare Parts are available to cover new equipment incorporated into any system.
- 3. Establish a central point of contact/office of responsibility for the uniform implementation of this Program Directive. Each Center shall submit the designated office name and symbol to APO, MAP-2 within 30 days of issuance of this APD.
  - 4. Each Center shall submit Launch Critical Spares Status Reports to the designated KSC office as defined in V. below.

B. KSC

- 1. Act as the central focal point for collection and consolidation of status reporting data for display in the appropriate control room and for transmission to the APO, MAP-2. KSC shall not alter the data submitted by MSC or MSFC without coordination with the responsible Center.
- 2. Assure special warehousing, issue, and control procedures for Launch Critical Spares for quick reaction supply support.

V.

REPORTING

A. STATUS REPORTS

KSC is responsible for submitting Launch Critical Spares Status Reports to APO, MAP-2. Separate reports will be submitted for each Apollo mission and shall be initiated four full months prior to a scheduled launch.

B. FREQUENCY OF STATUS REPORTS

- 1. Launch Critical Spares Status (Figure 1)
  - a. The initial monthly reports from KSC shall be submitted as of the last day of the month following issuance of this APD and shall cover those Apollo missions scheduled for flight during the following four months.

- b. Monthly reports, as of the last day of each month, shall be required until 42 days prior to a scheduled launch, at which time weekly reports, as of COB (close of business) each successive Friday, shall be required.
  - c. The design Centers shall provide KSC with their respective Launch Critical Spares Status Reports by the third working day following the "as-of" date.
  - d. KSC shall submit consolidated monthly and weekly status reports to APO, MAP-2 within five working days after the "as-of" date.
2. Launch Critical Spares shortages with no work-arounds (Figure 2).

This shall be a weekly report for each Apollo Flight. It shall be submitted to the APO simultaneously with each weekly Launch Critical Spares Status Report.

C. FORMAT

1. The reporting formats shall be identical to the Figures 1 & 2. The Line Item Report (Figure 1) shall include the following eight items for each system and for GSE.
- a. Number of line items
  - b. Total line items on hand
  - c. Line items on order
  - d. Line items not on order
  - e. Line items due-in prior to CDDT
  - f. Line items due-in prior to beginning of launch countdown
  - g. Line items on hand with less than minimum stockage objectives by start of CDDT. These are to be considered apparent shortages.
  - h. Work-arounds available by CDDT (Note: Work-arounds shall be coded to reflect how accomplished within the 12 hour time requirement.)

2. Launch Critical Spares that will neither be emplaced at KSC by CDDT time nor have suitable work-arounds shall be reported in detail similar to Figure 2.
- D. Each Center shall be prepared to provide a full report of the Launch Critical Spares situation for their respective items at each FRR. The report shall include, but not be limited to, the following:
1. Total number of line items required.
  2. Line items which have quantities in place at KSC less than established minimum levels.
    - a. Line items and quantities due in at KSC prior to CDDT.
    - b. Line items at launch site with less than minimum stockage objectives by start of CDDT.
    - c. Work-around procedures available, by number and type, for those items not in place by the start of CDDT.
    - d. Impact to launch - explain the launch risk involved if a Launch Critical Spare is not available and a work-around procedure has not been developed.

VI. IMPLEMENTATION

- A. Implementing actions shall begin immediately with a full compliance objective by the end of the month following issuance of this APD. Initial status reports shall be submitted as of that date. Current procedures for reporting launch critical spares shall be used until that time.
- B. Each Manned Space Flight Center shall prepare implementing directives and submit copies to Apollo Program Director within 30 days following release of this APD.

DATA SOURCE	NAME	SYMBOL	PHONE
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LAUNCH CRITICAL SPARES STATUS  
SHORTAGES AND NO WORK-AROUNDS BY CDDT

NOMENCLATURE	PART NUMBER	FSN (IF AVAIL.)	CONTRACTOR	QTY REQ'D	SYSTEM APPLICATION	EST ON DOCK-KSC	LOCATION OF PART	PROBABILITY OF FAILURE

DATA SOURCE
NAME
SYMBOL
PHONE
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